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DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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April 5, 2000

TO: Internal File

FROM: Sharon Falvey, Senior Reclamation Specialist and Project Lead. SKF

RE: Willow Creek As-Built, Pond 001 Changes, Permit Amendment, Plateau Mining Corporation, Willow Creek Mine, ACT/007/038-AM00A

SUMMARY:

Cyprus Plateau Mining Corporation (CPMC) submitted an amendment to obtain approval for changes made during the mine construction at the Willow Creek Mine. The changes were submitted to the Division on April 30, 1999, with revised pages submitted on August 3, 1999 and on October 29, 1999. The October 29, 1999 amendment also included minor changes to disturbed area drainage at DD-40 B and DD-40 A. The amendment submitted in March 2000 provides the text as-built information to address stipulation R645-301-121 from the December 15, 1999 conditional approval.

While replacing the primary spillway in Pond 001, coal fines were uncovered within the pond embankment. As a result the permittee provided additional designs to raise the pond embankment and replace the coal fines with clean fill as provided in the information submitted on December 7, 1999. This information is added to the review completed on November 8, 1999.

Information regarding the K-Seam in-mine water will be updated when the permittee completes the Probable Hydrologic Impacts for proposed K-seam dewatering. Information including the Willow Creek construction details were submitted but will be handled as amendment 99-H . Willow Creek relocation design maps and design information contained in the plan should be retained by the Division until the as-built survey is reviewed. Additionally, a review is now required for the reclamation plan due to the changes made to the operations configuration; reclamation design information was not considered during this review.

TECHNICAL ANALYSIS:

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Diversions.

The approved plan, prior to construction, provided ditch and culvert designs sized for the 25-year, 24-hour precipitation event. Following construction the applicant provided designs meeting the 10-year, 6-hour event. In accordance with Utah State rule R645-742.314 the Division required the greater peak flow; from the 10-year, 24-hour event; or from the 10-year, 6-hour event to be provided for the disturbed area perimeter drainage and undisturbed perimeter ditches. Maintenance standards are to be held to this design measure. These measures were required to: 1) ensure the pond volume is retained for the design event by reducing the potential for undisturbed upstream drainage contributing runoff to the sedimentation pond, and 2) ensure the perimeter ditches adjacent to Willow Creek will continue to discharge to the pond for the 10 year, 24-hour event (minimum design requirements for the sedimentation pond). The applicant submitted the plan showing these design criteria are met. The applicant also provided additional drainage plan changes to decrease their potential for impact on and off the permit area.

Sedimentation Ponds

The constructed sedimentation ponds varied from the approved designs and some construction features on pond 001 and 002 did not fully meet standard design practices. Pond design information was also provided for pond 12A, and 12B because pond 003 was not constructed. This application provided design changes to improve the function of ponds 001. Table 1 summarizes the information from the initial approved permit design, the existing pond, and the proposed configuration and final as built information submitted March 1, 2000. **Information provided for pond 002 indicate the pond contains less than the 10 year - 24 hour event if the decant remains open. Therefore, this pond needs to close the decant during rain events to meet the regulatory requirements.** The application indicates the remaining ponds meet the detention time.

Coal fines were uncovered within the embankment while replacing the primary spillway to meet design criteria on pond 001. As a result, the permittee provided design changes to raise the pond embankment and replace the coal fines with clean fill.

In a phone conversation on December 10, 1999 Mr. Johnny Pappus, Environmental Engineer - Plateau Mining Corporation, relayed the following information to Sharon Falvey, Reclamation Hydrologist.

1) Coal waste was found in a layer between compacted fill material.
2) Coal waste was found within a 5 foot depth below the embankment surface.
3) From observations gathered during the primary spillway excavation the coal lense was expected to diminish near drainage ditch DD-25 (Map 24).
4) Coal waste material was removed from the embankment and replaced with clean fill along the area between the pond access road and to an area just past drainage ditch DD-25.
5) The remaining embankment along the road between the pond and Willow Creek was tested and it was determined additional coal waste is present.

The information gathered along the embankment past drainage DD-25 to the pond inlet will be used to identify additional embankment work that may need to be completed. This information is not submitted at this time. The embankment along the road between the pond and Willow Creek contains a lense of coal waste and the operator is required to maintain the water level at a safe distance below the waste until the waste is replaced with clean compacted fill or the material is otherwise demonstrated to meet regulatory requirements.

Table 1.

Sediment Pond 001 Proposed Design v.s. As-built

Element	Approved Initial permit	As-built April 30, 1999	Proposed Changes December 7, 1999	Current As Built March 1, 2000
Area Draining to Pond	26 acres	40.92 acres	44.78	No Change
Max Capacity Elevation/volume	6168.5 ft 6.88 acre feet	6169.2 ft 9.7 acre feet	6171.0 ft. 11.55 Acre Feet	No Change
Max sediment capacity elev./vol.	0.33 acre feet	1.32 acre feet	6163.9 ft./4.7 AF 1.34 AF- 3 yr storage capacity	No Change
60% sediment clean out level	unknown	unknown	2.8 AF 6161.5	No Change

Sediment Pond 001 Proposed Design v.s. As-built

Element	Approved Initial permit	As-built April 30, 1999	Proposed Changes December 7, 1999	Current As Built March 1, 2000
Design capacity	25-yr, 24-hr 2.97 AF	10-yr, 24-hr 3.16 AF	10-yr, 24-hr 4.25 AF includes 3.36 AF plus 0.89 AF of minewater discharged over a 24 hour period.	No Change
Minewater discharge	0.1 cfs / five day period	0.17 cfs/three day period	See design capacity above and table 2 below.	
Excess Storage	2.58	4.88	Without mine water discharge (0.89 AF) and assuming a 3 year sediment storage the excess storage is 5.96 AF.	Including mine water discharge (0.89 AF) and assuming a 3 year sediment storage the excess storage is 6.0 AF. (7.25 if sediment storage is not included).
Primary Spillway	6168.5 vertical riser 18"	6169.2 vertical riser 18"	6171.0 ft vertical riser 24"	Same.
Decant	6165.5 3-Orifice	6165.5 3-Orifice	6163.9 ft. Single 10 inch decant elbow with gate shutoff valve.	6163.7
Oil skimmer	Oil skimmer with trash rack	Trash rack only	Oil skimmer to be placed on the primary spillway.	Same.
Emergency Spillway	6168.5	6169.5	6172.0	Same.
Minimum freeboard	1.37	0.99 (text pg 4.5-50)	1.5 ft (between emergency spillway and embankment).	1.17 ft
Embankment top width	40 ft	20ft	Elements for stability should be reviewed by an engineer.	Awaiting information.

Sediment Pond 001 Proposed Design v.s. As-built

Element	Approved Initial permit	As-built April 30, 1999	Proposed Changes December 7, 1999	Current As Built March 1, 2000
Side slopes	All impoundments not steeper than 2H:1V	Commitment removed: actual steepest side slope not provided.	Elements for stability should be reviewed by an engineer.	Awaiting information
Pond Embankment	Not found.	6170.95 ft.	6173.5 ft. minimum	Same.

A 4" pipeline is provided to transfer water from pond 001 to 013 and other ponds as necessary. Mine water discharge may be routed to five ponds 001, 12A, 12B, 13, and the Thickener Pond. Excess water may be pumped into the mine for use in the water make-up system by tying into the raw water tank supply line. The pond capacity information is presented in Table 2 below. In general the amendment allows for minewater storage in the ponds up to the decant elevation. Total available volume is based largely on the storage remaining beyond that occupied by sediment. **Excess mine storage was stated to be 7.25 AF which includes the sediment storage: the proposed sediment storage volume is not considered excess by the Division**. Water discharge in pond 001 may include the inflow rate plus the decant rate if water quality meet the discharge standards of the UPDES discharge permit. The mine water can be retained up to 6166.8 feet in pond 001 and still retain the runoff for the 10 year- 24 hour event without spilling out the primary spillway.

Table 2.

Mine Water and Storage in Sedimentation Ponds

Element	Pond 1	Pond 12A	Pond 12B	Pond 13	Thickener Pond
Max Sediment capacity/elevation	4.8 AF 6164.0 ft.	0.64 AF 6103.6 ft.	0.64 AF 6093.5 ft. 6093.4 *	5.82 AF. 6200.5 ft.	None.
60% Sediment Capacity/elevation	2.88 AF 6161.6 ft.	0.38 AF 6102.6 ft.	0.38 AF 6092.7 ft.	3.49 AF 6196.4 ft .	None.
Runoff volume 10 year-24 hr event.	3.36 AF plus 0.89 AF minewater discharge.	Storage for 0.47 AF of 1.44 AF	0.97 AF from pond 12A and 1.04 AF from 12B	3.18 AF 6205.0 ft. 6250.5*	None. 5.42 AF provided to contain a spill from the thickener tank.
Decant Elevation.	6163.9 ft. 6136.7 *	6103.7 ft.	6093.4 ft.	6200.5	None.

Mine Water and Storage in Sedimentation Ponds

Element	Pond 1	Pond 12A	Pond 12B	Pond 13	Thickener Pond
Minewater discharge /elevation.	6166.8 ft.	0.64 AF 6103.6 ft. 6103.7*	0.64 AF 6093.4 ft.	5.91 AF 6250.2 ft. 6250.5*	2.45 AF 6123.2 ft.
Total Capacity.	11.55 AF	1.11 AF	2.65 AF	9.0 AF	7.87 AF
Excess Storage.	6.0 AF if full to maximum sediment capacity.	None if full to maximum sediment capacity.	None if full to maximum sediment capacity.	None if full to maximum sediment capacity.	None 2.4 AF if full to 6123.2 ft.

The text in the permit states the MSHA pond 013 will be inspected monthly as authorized by MSHA. An MSHA authorization was included in Volume 10, Exhibit 10 and allows inspections to be conducted every 30 days, effective through March 1, 2000, with attached conditions. In summary the conditions include: 1) immediate inspection after a seismic activity occurs in the vicinity, any report of instability hazard or unusual condition occurs, a reservoir spill occurs, or rainfall equal to 1.2 inches occurs within a 6 hr period, 2) a precipitation event of 1 inch in a six hour period requires inspection within 24 hrs, 3) all inspections will record the amount of water and depth behind the embankment and the freeboard measurement, and 4) a record of daily rainfall will be maintained. **Note: the request letter to MSHA stated the pond water level was not expected to increase above 4 inches of water while the present plan indicates minewater storage may need to be contained in the pond.**

Alternate Sediment Control Measures

The submitted plan identifies five ASCA's (Alternate Sediment Control Areas). The ASCA's are shown on the Drainage and Sediment Control Plan maps while the Alternate Sediment Control Measures are provided in Appendix F. The applicant provided standard practices for these areas. Standards for success and effectiveness for implementing and maintaining these measures will be determined by the inspector in the field.

Water quality standards and effluent limitations.

The transfer of minewater from Sediment Pond No. 001 to Sediment Pond 013 is shown on Map 18B. If the water does not meet UPDES discharge requirements, this pipe is proposed to be used to transfer water to other ponds as well. On page 4.5-29, the following commitments are made: 1) the applicant will not discharge mine water from the K-seam, and 2) water will be discharged from the decant only if it meets UPDES discharge requirements. Similar information is found on pp. 4.7-10 and Ex13-18.

Mine water discharge may be routed to five ponds 001, 12A, 12B, 13, and the Thickener Tank Pond. Pond storage and pond capacity for minewater storage are provided in Table 2 under **Sedimentation Ponds** in this TA.

Findings:

This amendment does not meets the minimum regulatory requirements because the plan needs to incorporate engineering design certification and embankment stability analyses to be completed prior to determining this section complete. The amendment was approved with conditions on December 15, 1999. Additional information to address the remaining stipulations was recently submitted. Coal waste remaining in the embankment needs to be shown to meet regulatory requirements. A complete engineering and stability analyses and design must be provided for the remaining coal waste currently retained in the embankment. The permittee will submit a proposal with stability analyses prior to completing the construction.

The following permit conditions were satisfied by this amendment.

R645-301-121. Provide changes to the text applicable to design changes approved for embankment enlargement. need to be provided to the Division immediately following construction:

The following permit conditions remain:

R645-301-514-300. Certify that all design standards in the R645 regulations are met. This should include certification that the pond can be safely operated in any areas where the coal waste might remains and should include any additional design and construction requirements for the structure).

R645-301-533. Provide a slope stability analyses assuming rapid drawdown in the pond and an elevated water surface in Willow Creek for critical sections of the embankment.

RECOMMENDATION:

The applicant provided portions related to stipulation **R645-301-121.** Information submitted under this amendment can be approved and incorporated. The appropriate number of clean copies should be submitted to be included in the plan. The Division needs to complete the recently submitted bank stability analyses pertaining to the remaining coal mine waste contained within the pond embankment.

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